THERMAL ARC®

4030

FABSTAR®

TRANSFORMER-RECTIFIER WELDING MACHINE

Operating Manual

Version No: 1 **Issue Date:** April 20, 2006 **Manual No.:** 430429-460

Operating Features:

GMAW FCAW	400 AMP	CV	DC	3 PHASE	200 V	230 V	460 V	575 V

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new Thermal Arc product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network. To locate your nearest distributor or service agency call 1-800-752-7621, or visit us on the web at **www.thermalarc.com.**

This Operating Manual has been designed to instruct you on the correct use and operation of your Thermal Arc product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

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The Brand of Choice for Contractors and Fabricators Worldwide.

Thermal Arc is a Global Brand of Arc Welding Products for Thermadyne Industries Inc. We manufacture and supply to major welding industry sectors worldwide including; Manufacturing, Construction, Mining, Automotive, Aerospace, Engineering, Rural and DIY/Hobbyist.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to developing technologically advanced products to achieve a safer working environment within the welding industry.

WARNINGS

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.

While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.

Fabstar 4030 Transformer-Rectifier Welding Machine
Instruction Manual Number 430429-460 for the following part numbers:
· 100010A-1 FABSTAR® 4030 60 Hz
· 100010A-2 FABSTAR® 4030 60 Hz
· 100010A-3 FABSTAR® 4030 50/60 Hz

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Publication Date: April 20, 2006

Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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WARRANTY

INTRODUCTION

How To Use This Manual

This Owner's Manual applies to just specification or part numbers listed on cover page.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the words **WARNING, CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING

A WARNING gives information regarding possible personal injury.

CAUTION

A CAUTION refers to possible equipment damage.

NOTE

A NOTE offers helpful information concerning certain operating procedures.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address and phone number in your area listed in the inside back cover of this manual. Include the Owner's Manual number and equipment identification numbers.

Electronic copies of this manual can also be downloaded at no charge in Acrobat PDF format by going to the Thermal Arc web site listed below and clicking on the Literature Library link:

http://www.thermalarc.com

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the rear panel. In some cases, the nameplate may be attached to the control panel. Equipment which does not have a name plate such as gun and cable assemblies is identified only by the specification or part number printed on the shipping container.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area listed in the inside back cover of this manual.

Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before un-crating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc., to un-crate the unit.

WARNING

Falling ma chine due to lift ing eye fail ure may cause death or serious in jury.

- Lifting device may fail when over loaded.
- This lift ing device is designed to lift the power source ONLY. If the machine is equipped with a trailer or accessories over 100 pounds, DO NOT LIFT by lifting eyes.
- Avoid sudden jerks, drops, or swinging.
- Check lifting device components visually for looseness and signs of metal fatigue.
- Before changing any hardware, check grade and size of bolts, and replace with bolts of equal or higher size and grade.

Symbol Chart

Note that only some of these symbols will appear on your model.

	On
	Off
	Dangerous Voltage
	Increase/Decrease
	Circuit Breaker
	AC Auxiliary Power
	Fuse
A	Amperage
V	Voltage
Hz	Hertz (cycles/sec)
f	Frequency
	Negative
	Positive
	Direct Current (DC)
	Protective Earth (Ground)
	Line
	Line Connection
	Auxiliary Power
115V 15A	Receptacle Rating- Auxiliary Power

1	Single Phase
3	Three Phase
	Three Phase Static Frequency Converter-Transformer-Rectifier
	Remote
X	Duty Cycle
%	Percentage
	Panel/Local
	Shielded Metal Arc Welding (SMAW)
	Gas Metal Arc Welding (GMAW)
	Gas Tungsten Arc Welding (GTAW)
	Air Carbon Arc Cutting (CAC-A)
	Constant Current
	Constant Voltage Or Constant Potential
	High Temperature
	Fault Indication
	Arc Force
	Touch Start (GTAW)
	Variable Inductance
V	Voltage Input

	Wire Feed Function
	Wire Feed Towards Workpiece With Output Voltage Off.
	Welding Gun
	Purging Of Gas
	Continuous Weld Mode
	Spot Weld Mode
t	Spot Time
t1	Preflow Time
t2	Postflow Time
	2 Step Trigger Operation Press to initiate wirefeed and welding, release to stop.
	4 Step Trigger Operation Press and hold for preflow, release to start arc. Press to stop arc, and hold for preflow.
t	Burnback Time
	Disturbance In Ground System
IPM	Inches Per Minute
MPM	Meters Per Minute

Art # A-04130

SAFETY INSTRUCTIONS AND WARNINGS

WARNING

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Some of these practices apply to equipment connected to power lines; other practices apply to engine driven equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld.

Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions. **HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.**

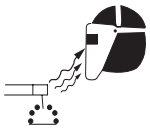
Arc Welding Hazards

WARNING

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



WARNING

ARC RAYS can burn eyes and skin; NOISE can damage hearing. Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.

3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

WARNING

FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breath the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WARNING

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or cutting	*Electrode Size*	*Filter*	*Welding or cutting*	*Electrode Size*	*Filter*
Torch soldering		2	**Gas metal-arc**		
Torch brazing		3 or 4	Non-ferrous base metal	All	11
Oxygen Cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gas tungsten arc welding	All	12
Medium	1 to 6 in., 25-150 mm	4 or 5	(TIG)	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Atomic hydrogen welding	All	12
Gas welding			Carbon arc welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Plasma arc welding		
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6	**Carbon arc air gouging**		
Heavy	Over 1/2 in., 12 mm	6 or 8	Light		12
Shielded metal-arc	Under 5/32 in., 4 mm	10	Heavy		14
	5/32 to 1/4 in.,	12	**Plasma arc cutting**		
	Over 1/4 in., 6.4 mm	14	Light	Under 300 Amp	9
			Medium	300 to 400 Amp	12
			Heavy	Over 400 Amp	14

WARNING

FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

WARNING

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

WARNING

Engines can be dangerous.

WARNING

ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

WARNING

ENGINE FUEL can cause fire or explosion.

Engine fuel is highly flammable.

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank — allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

WARNING

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

WARNING

SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and –) on batteries.

WARNING

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals know to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety code Sec. 25249.5 et seq.)

NOTE

Considerations About Welding And The Effects of Low Frequency Electric and Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields - Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "...there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cable around the body.
4. Keep welding power source and cables as far away from body as practical.

ABOUT PACEMAKERS:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

Principal Safety Standards

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Precautions de Securite en Soudage à l'Arc

MISE EN GARDE

LE SOUDAGE A L'ARC EST DANGEREUX

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S'APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU'ILS N'AIENT CONSULTE UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D'OPERATION OU LES INSTRUCTIONS AVANT D'INSTALLER, UTILISER OU ENTRETENIR CET EQUIPEMENT.

Les produits et procédés de soudage peuvent sauser des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l'utilisateur n'adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et coupage, des pratiques sécuritaires se sont développées suite à l'expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d'utiliser l'equipement. Toute personne n'ayant pas suivi un entraînement intensif en soudage et coupage ne devrait pas tenter de souder. Certaines pratiques concernent les équipements raccordés aux lignes d'alimentation alors que d'autres s'adressent aux groupes électrogènes.

La norme Z49.1 de l'American National Standard, intitulée "SAFETY IN WELDING AND CUTTING" présente les pratiques sécuritaires à suivre. Ce document ainsi que d'autres guides que vous devriez connaître avant d'utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D'INSTALLATION, DE REPARATION, D'ENTRETIEN ET D'ESSAI.

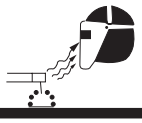
Dangers Relatifs au Soudage à l'Arc

AVERTISSEMENT

L'ELECTROCUTION PEUT ETRE MORTELLE.

Une décharge électrique peut tuer ou brûler gravement. L'électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d'alimentation et les circuits internes de l'équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d'entrainement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3 Isolez-vous de la pièce à souder et de la mise à la terre au moyen de tapis isolants ou autres.
4. Déconnectez la prise d'alimentation de l'équipement ou arrêtez le moteur avant de l'installer ou d'en faire l'entretien. Bloquez le commutateur en circuit ouvert ou enlevez les fusibles de l'alimentation afin d'éviter une mise en marche accidentelle.
5. Veuillez à installer cet équipement et à le mettre à la terre selon le manuel d'utilisation et les codes nationaux, provinciaux et locaux applicables.
6. Arrêtez tout équipement après usage. Coupez l'alimentation de l'équipement s'il est hors d'usage ou inutilisé.
7. N'utilisez que des porte-électrodes bien isolés. Ne jamais plonger les porte-électrodes dans l'eau pour les refroidir. Ne jamais les laisser traîner par terre ou sur les pièces à souder. Ne touchez pas aux porte-électrodes raccordés à deux sources de courant en même temps. Ne jamais toucher quelqu'un d'autre avec l'électrode ou le porte-électrode.
8. N'utilisez pas de câbles électriques usés, endommagés, mal épissés ou de section trop petite.
9. N'enroulez pas de câbles électriques autour de votre corps.
10. N'utilisez qu'une bonne prise de masse pour la mise à la terre de la pièce à souder.
11. Ne touchez pas à l'électrode lorsqu'en contact avec le circuit de soudage (terre).
12. N'utilisez que des équipements en bon état. Réparez ou remplacez aussitôt les pièces endommagées.
13. Dans des espaces confinés ou mouillés, n'utilisez pas de source de courant alternatif, à moins qu'il soit muni d'un réducteur de tension. Utilisez plutôt une source de courant continu.
14. Portez un harnais de sécurité si vous travaillez en hauteur.
15. Fermez solidement tous les panneaux et les capots.



AVERTISSEMENT

LE RAYONNEMENT DE L'ARC PEUT BRÛLER LES YEUX ET LA PEAU; LE BRUIT PEUT ENDOMMAGER L'OUIE.

L'arc de soudage produit une chaleur et des rayons ultraviolets intenses, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l'ouïe.

1. Portez une casque de soudeur avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après) pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l'exécution d'une soudure.
2. Portez des lunettes de sécurité approuvées. Des écrans latéraux sont recommandés.
3. Entourez l'aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d'arc ou de l'éblouissement; avertissez les observateurs de ne pas regarder l'arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d'oreille approuvés lorsque le niveau de bruit est élevé.

AVERTISSEMENT

LES VAPEURS ET LES FUMEES SONT DANGEREUSES POUR LA SANTE.

Le soudage dégage des vapeurs et des fumées dangereuses à respirer.

1. Eloignez la tête des fumées pour éviter de les respirer.
2. A l'intérieur, assurez-vous que l'aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l'arc.
3. Si la ventilation est inadequate, portez un respirateur à adduction d'air approuvé.
4. Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consummables, aux revêtements et aux produits nettoyants.
5. Ne travaillez dans un espace confiné que s'il est bien ventilé; sinon, portez un respirateur à adduction d'air. Les gaz protecteurs de soudage peuvent déplacer l'oxygène de l'air et ainsi causer des malaises ou la mort. Assurez-vous que l'air est propre à la respiration.
6. Ne soudez pas à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec des vapeurs et former des gaz hautement toxiques et irritants.

SELECTION DES NUANCES DE FILTRES OCULAIRS POUR LA PROTECTION DES YEUX EN COUPAGE ET SOUDAGE (selon AWS á 8.2-73)

Opération de coupage ou soudage	Dimension d'électrode ou Epiasseur de métal ou Intensité de courant	Nuance de filtre oculaire	Opération de coupage ou soudage	Dimension d'électrode ou Epiasseur de métal ou Intensité de courant	Nuance de filtre oculaire
Brassage tendre au chalumeau	toutes conditions	2	Soudage á l'arc sous gaz avec fil plein (GMAW)		
Brassage fort au chalumeau	toutes conditions	3 ou 4	métaux non-ferreux	toutes conditions	11
Oxycoupage			métaux ferreux	toutes conditions	12
mince	moins de 1 po. (25 mm)	2 ou 3	Soudage á l'arc sous gaz avec électrode de tungstène (GTAW)	toutes conditions	12
moyen	de 1 á 6 po. (25 á 150 mm)	4 ou 5	Soudage á l'hydrogène atomique (AHW)	toutes conditions	12
épais	plus de 6 po. (150 mm)	5 ou 6	Soudage á l'arc avec électrode de carbone (CAW)	toutes conditions	12
Soudage aux gaz			Soudage á l'arc Plasma (PAW)	toutes dimensions	12
mince	moins de 1/8 po. (3 mm)	4 ou 5	Gougeage Air-Arc avec électrode de carbone		
moyen	de 1/8 á 1/2 po. (3 á 12 mm)	5 ou 6	mince		12
épais	plus de 1/2 po. (12 mm)	6 ou 8	épais		14
Soudage á l'arc avec électrode enrobees (SMAW)	moins de 5/32 po. (4 mm)	10	Coupage á l'arc Plasma (PAC)		
	5/32 á 1/4 po. (4 á 6.4 mm)	12	mince	moins de 300 amperès	9
	plus de 1/4 po. (6.4 mm)	14	moyen	de 300 á 400 amperès	12
			épais	plus de 400 amperès	14

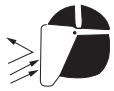
7. Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder ont été grattées à fond, que si l'espace est bien ventilé; si nécessaire portez un respirateur à adduction d'air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.

AVERTISSEMENT

LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION

L'arc produit des étincellies et des projections. Les particules volantes, le métal chaud, les projections de soudure et l'équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l'électrode ou du fil-électrode avec un objet métallique peut provoquer des étincelles, un échauffement ou un incendie.

1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l'arc, ou couvrez-les soigneusement avec des bâches approuvées.
4. Méfiez-vous des projections brulantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N'oubliez pas qu'une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l'autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d'électrocution et d'incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l'électrode du porte-électrode ou coupez le fil au tube-contact lorsqu'inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.



AVERTISSEMENT

LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.

Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter du éclats de laitier.

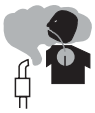
1. Portez un écran facial ou des lunettes protectrices approuvées. Des écrans latéraux sont recommandés.
2. Portez des vêtements appropriés pour protéger la peau.

AVERTISSEMENT

LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER

Les bouteilles contiennent des gaz protecteurs sous haute pression. Des bouteilles endommagées peuvent exploser. Comme les bouteilles font normalement partie du procédé de soudage, traitez-les avec soin.

1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchainez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d'être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.
4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N'utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyauxs et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l'ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.



AVERTISSEMENT

LES MOTEURS PEUVENT ETRE DANGEREUX

LES GAZ D'ECHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.

Les moteurs produisent des gaz d'échappement nocifs.

1. Utilisez l'équipement à l'extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d'échappement doivent être envoyées à l'extérieur, loin des prises d'air du bâtiment.

AVERTISSEMENT

LE CARBURANT PEUR CAUSER UN INCENDIE OU UNE EXPLOSION.

Le carburant est hautement inflammable.

1. Arrêtez le moteur avant de vérifier le niveau e carburant ou de faire le plein.
2. Ne faites pas le plein en fumant ou proche d'une source d'étincelles ou d'une flamme nue.
3. Si c'est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d'en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord: prévoyez de l'espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.

AVERTISSEMENT

DES PIECES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.
3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.

AVERTISSEMENT

DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumu-lateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.
5. Utilisez la polarité correcte (+ et –) de l'accumulateur.

AVERTISSEMENT

LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

Principales Normes de Securite

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

National Electrical Code, norme 70 NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, document P-1, Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

DESCRIPTION OF EQUIPMENT

This unit is a constant voltage, transformer rectifier type DC welding machine that provides volt-ampere characteristic curves that are basically flat.

This unit is recommended to be used with gas metal arc welding (MIG) and flux core arc welding (with or without shielding gas) applications. This unit has to be used with a wire feeder. All Thermal Arc feeder models can be used with this unit. In some cases an adapter cable may be required.

Controls and Outlets

1. **Input Power On/Off Switch** — The ON position energizes the power source and puts it in a ready state.

2. **Welding Voltage Control** — Adjusts arc welding output and open circuit voltage.

3. **Voltmeter** — Monitors open circuit voltage and welding voltages anytime secondary circuit is closed.

4. **Ammeter** — Monitors the current flowing through the welding arc.

5. **Positive Terminal (+)** — Serves as a connection point for the lead to the wire feeder when reverse polarity (DCEP) is desired.

6. **Feeder Control Receptacle** — Connection point for a remote voltage control type wire feeder control (19-pin).

7. **Local/Remote Switch** — Selects voltage control function for either local or remote operation.

8. **Circuit Breaker (10 amps)** — Protects the 115-V AC control circuitry and the 115-volt receptacles.

9. **115-V AC Receptacles** — Provides auxiliary power for wire feeders, water pumps, etc. — 10 amps max at 100% duty cycle.

10. **Negative Terminal (–)** — Serves as a connection point for the lead from workpiece for reverse polarity (DCEP).

11. **Overload Indicator** — Yellow L.E.D., when lighted, indicates that machine has shut down as a result of amperage overload or rectifier overtemperature (S2).

12. **Stability Control Switch** — When the switch is in the mild steel (forceful), provides the user with a forceful arc. When the switch is in the stainless (smooth), provides the user with a smooth arc.

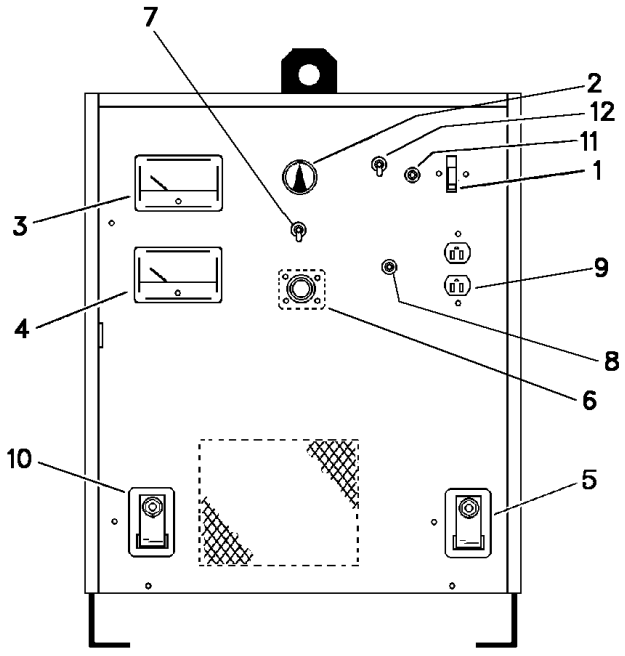


Figure 3-1 Control Panel for FABSTAR 4030

ITEM		FABSTAR® 4030 100010A-1 and -2		FABSTAR® 4030 100010A-3	
Rated Output Amperage		400 A	300 A	375 A	300A
Rated Output Voltage		32 V	32 V	33 V	29V
Rated Duty Cycle		60%	100%	60%	100%
Maximum Open Circuit Voltage		41 V			
Auxiliary Power (AC)		1.1 KVA-115 V, 10A			
Rated Input Voltage/Frequency		100010A-1 200/230/460V 60 Hz 100010A-2 230/460/575V 60 Hz		400V 50/60 Hz	
Input Phase		3 Phase		3 Phase	
Input Amperage	200V	55	44	—	—
At Rated Outputs	230V	48	38	—	—
And Line Voltage	400V	—	—	27	24
Connections	460V	24	19	—	—
	575V	19	16	—	—

Table 3-1 Machine Specifications

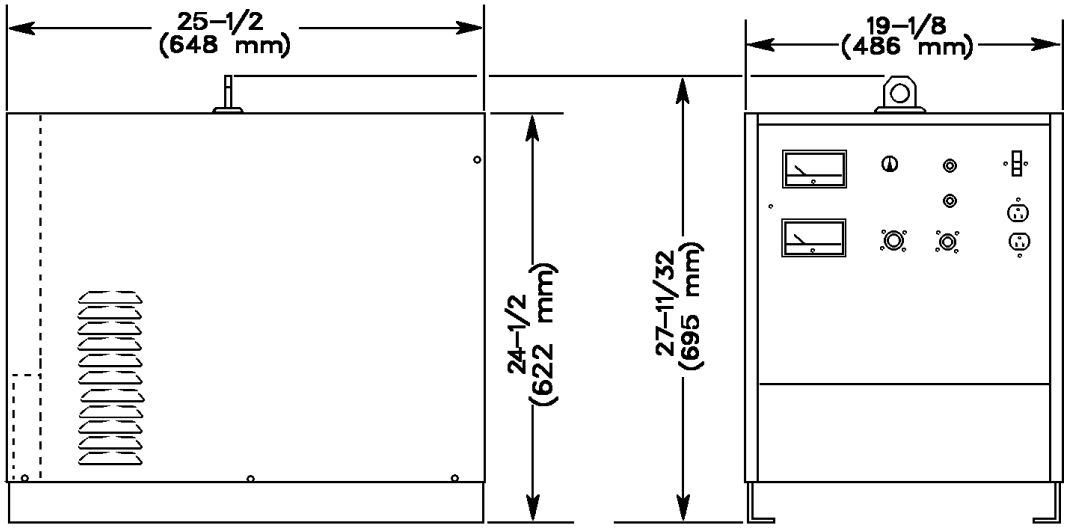


Figure 3-2 Dimensions and Weight Information

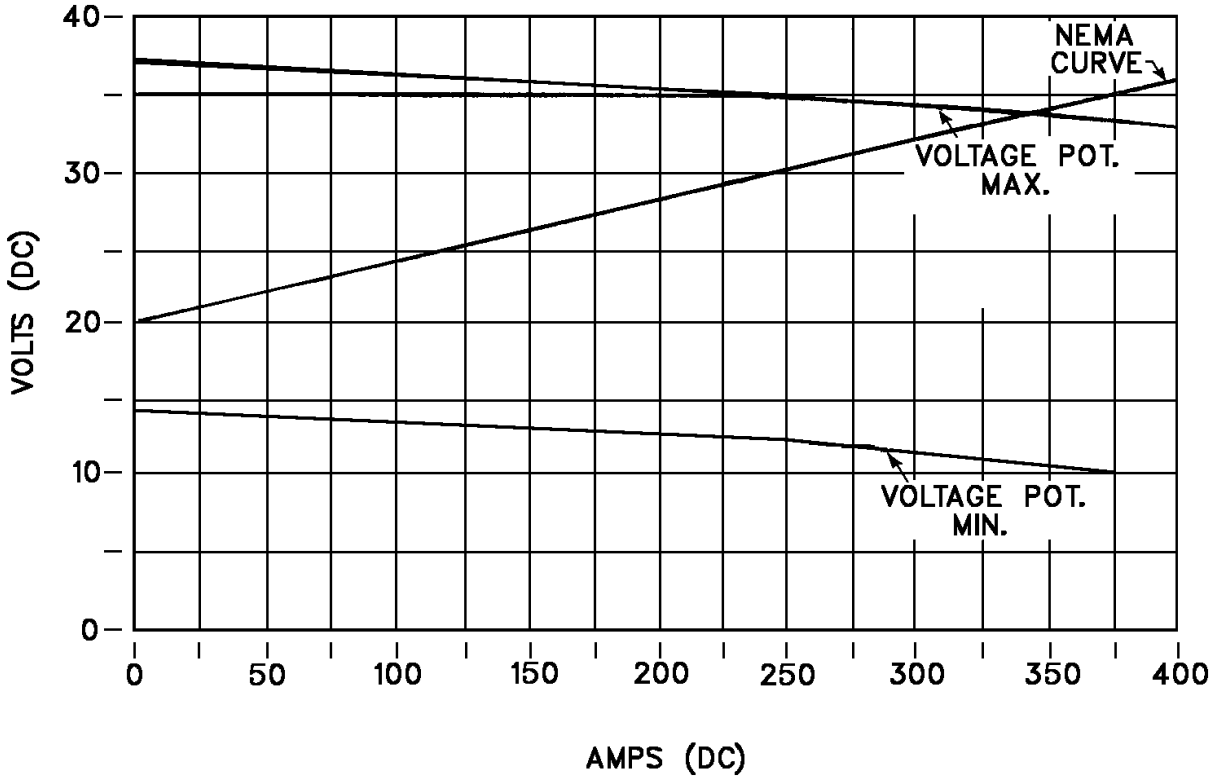


Figure 3-3 Volt Amp Curves

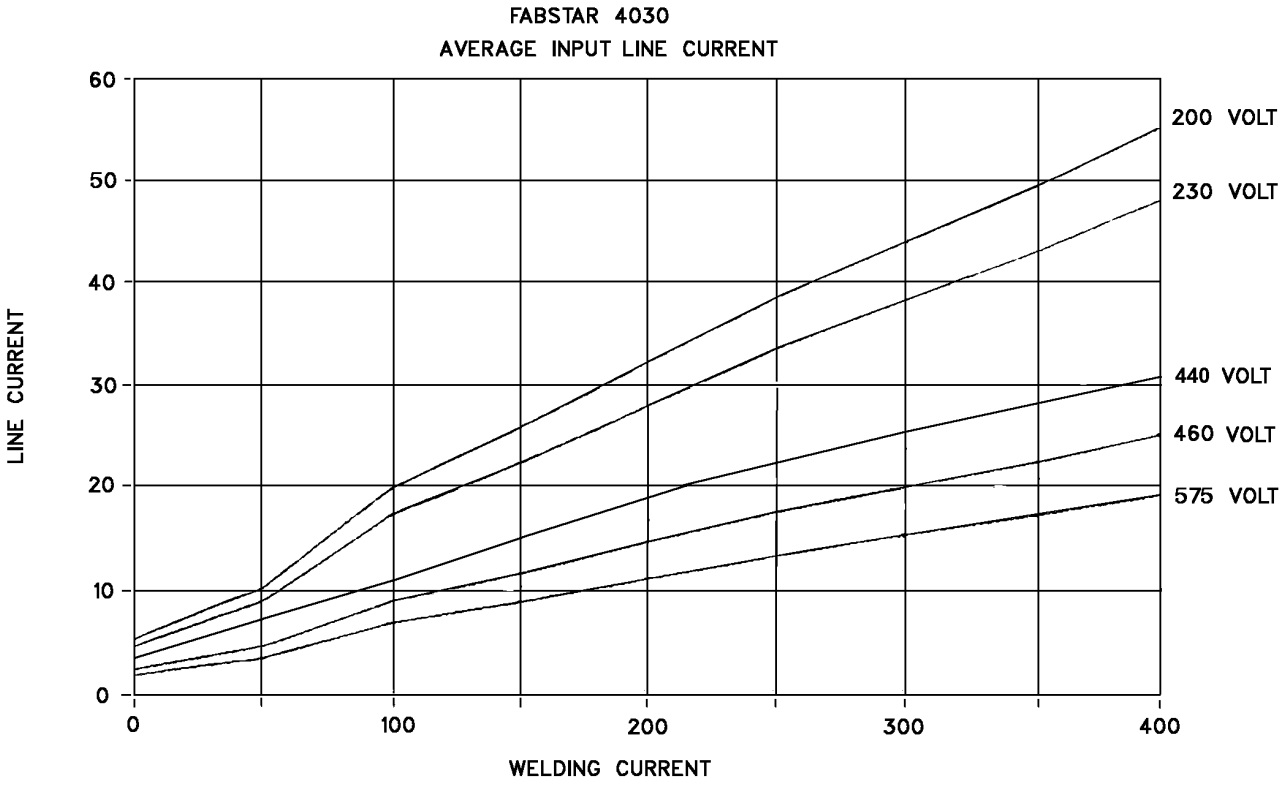


Figure 3-4 Input Line Current Chart

Duty Cycle

(Figure 3-5)

Duty cycle is the percentage of each ten-minute period of time that the welding machine may be operated under rated load conditions. For example, a duty cycle of 60% means that the machine can be operated at rated load for an average of 6 minutes of each 10 minute period of operation. During the remaining 4 minutes, the machine must idle to permit proper cooling. Figure 3-6 enables the operator to determine the duty cycle at various welding amperages.

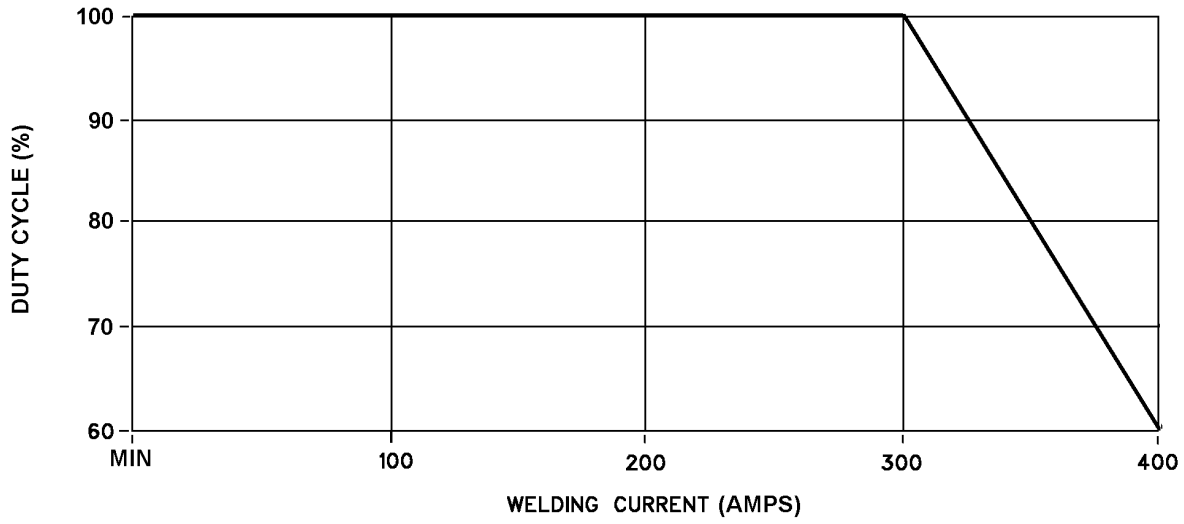
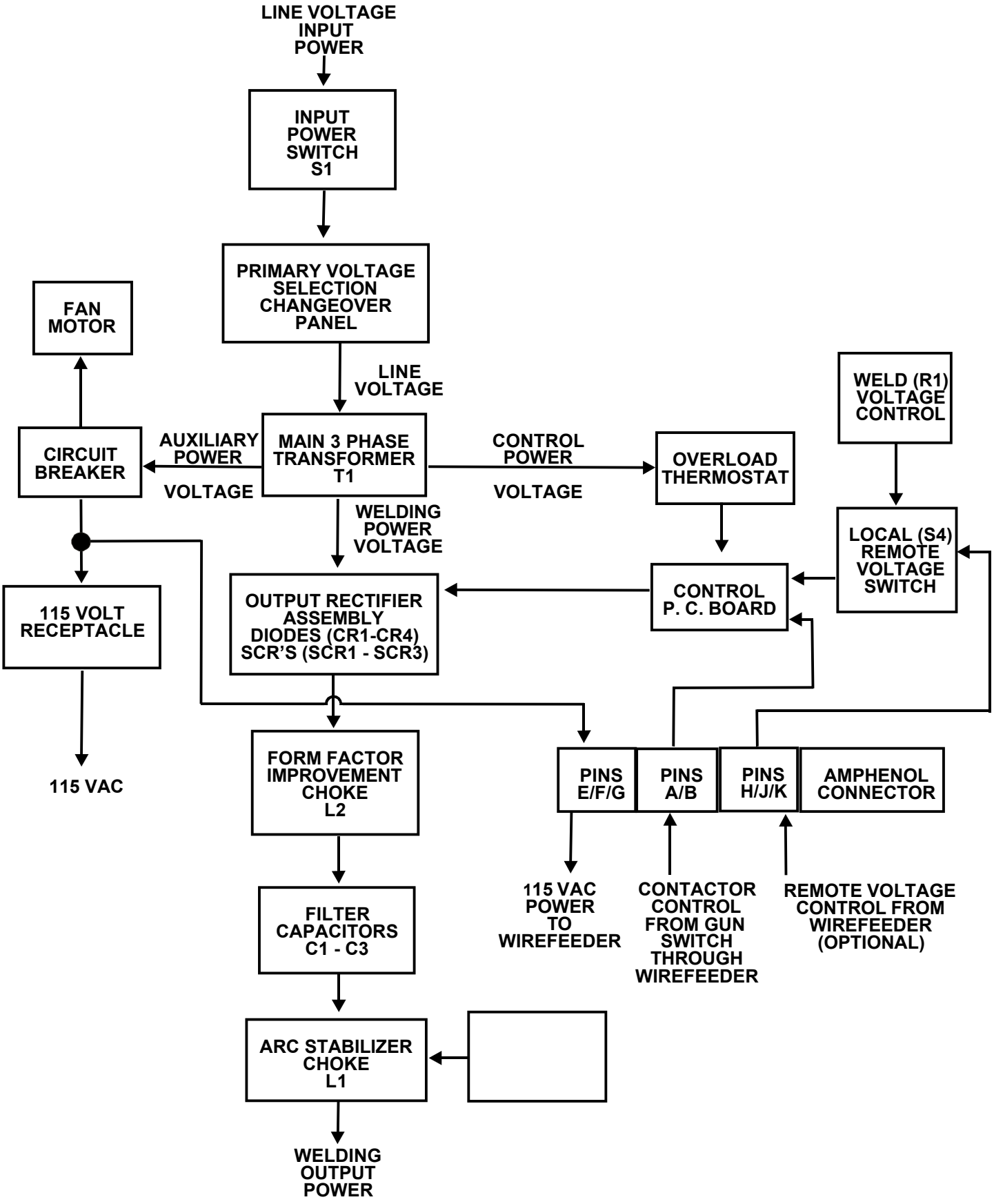


Figure 3-5 Duty Cycle Chart


LINE VOLTAGE INPUT POWER
INPUT POWER SWITCH S1
PRIMARY VOLTAGE SELECTION CHANGEOVER PANEL
FAN MOTOR
LINE VOLTAGE
WELD (R1) VOLTAGE CONTROL
CIRCUIT BREAKER
AUXILIARY POWER VOLTAGE
MAIN 3 PHASE TRANSFORMER T1
CONTROL POWER VOLTAGE
OVERLOAD THERMOSTAT
WELDING POWER VOLTAGE
LOCAL (S4) REMOTE VOLTAGE SWITCH
115 VOLT RECEPTACLE
OUTPUT RECTIFIER ASSEMBLY DIODES (CR1-CR4) SCR'S (SCR1 - SCR3)
CONTROL P. C. BOARD
115 VAC
FORM FACTOR IMPROVEMENT CHOKE L2
PINS E/F/G
PINS A/B
PINS H/J/K
AMPHENOL CONNECTOR
115 VAC POWER TO WIREFEEDER
CONTACTOR CONTROL FROM GUN SWITCH THROUGH WIREFEEDER
REMOTE VOLTAGE CONTROL FROM WIREFEEDER (OPTIONAL)
FILTER CAPACITORS C1 - C3
ARC STABILIZER CHOKE L1
WELDING OUTPUT POWER

INSTALLATION

Location

For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperature or corrosive fumes. Moisture can condense on electrical components, causing corrosion or shorting of circuits. Dirt on components helps retain this moisture.

Adequate air circulation is needed at all times in order to assure proper operation. Provide a minimum of 12 inches (305 mm) of free air space at both front and rear of the unit. Make sure that the ventilator openings are not obstructed.

Grounding

The frame of this welding machine should be grounded for personnel safety. Where grounding is mandatory under state or local codes, it is the responsibility of the user to comply with all applicable rules and regulations. Where no state or local codes exist, it is recommended that the National Electrical Code be followed. Refer to Table 4-1 for wire sizes.

The work or work table must also be grounded by using a conductor attached to a driven ground or water pipe as described below. See Figures 4-1 and 4-2.

The requirements and recommendations for grounding apply to rubber tire mounted equipment. In addition to the usual function of protecting personnel against the hazard of electrical shock due to fault in the equipment, grounding serves to discharge the static electrical charges which tend to build up on the surfaces of tire mounted equipment. These static charges sometimes cause painful shock to personnel, and in some instances, lead to the erroneous conclusion that an electrical fault exists in the equipment.

Use an input-power cable assembly which includes a grounding conductor to connect this equipment to the input power supply. When included in the cable assembly, the grounding conductor will be green or green with a yellow stripe, or bare. Connect

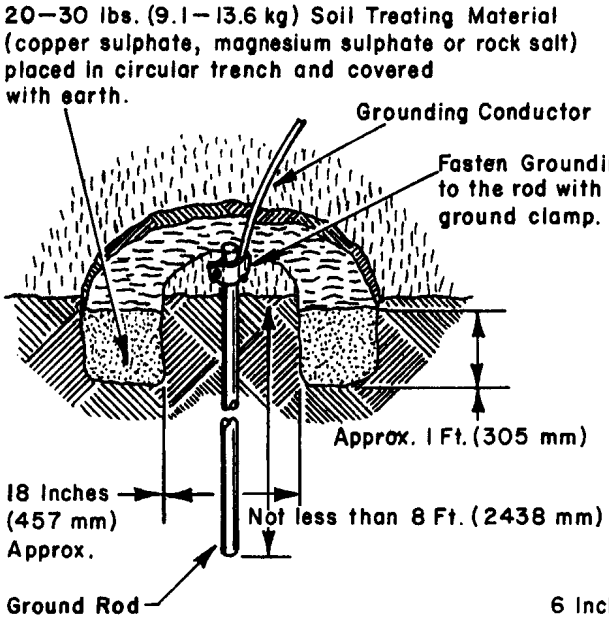

20—30 lbs. (9.1—13.6 kg) Soil Treating Material (copper sulphate, magnesium sulphate or rock salt) placed in circular trench and covered with earth.
Grounding Conductor
Fasten Grounding Conductor to the rod with an approved ground clamp.
Approx. 1 Ft. (305 mm)
18 Inches (457 mm) Approx.
Not less than 8 Ft. (2438 mm)
Ground Rod

Figure 4-1 Outside Ground

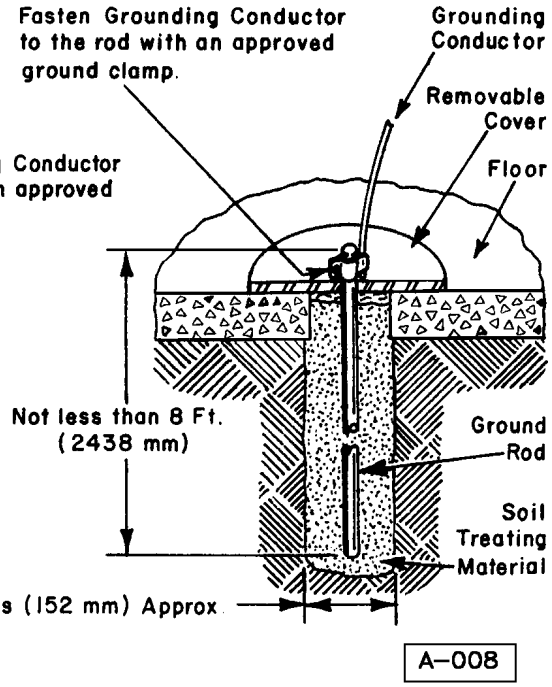


Figure 4-2 Inside Ground

the grounding conductor to the equipment grounding terminal, if provided, and if not, to the equipment frame, taking care to see that good electrical contact is made between conductor and frame. Connect the other end of the grounding conductor to the system ground.

If, for any reason, an input cable which does not include a grounding conductor is used, the equipment may be grounded with a separate conductor if permitted under applicable code, or by special permission of the jurisdictional body responsible for enforcement of the code. Minimum size and color coding requirements must be in accordance with any applicable state or local code, or the National Electrical Code.

If metallic armored cable or conduit is used, the metal sheathing or conduit must be effectively grounded as required by state or local code, or the National Electrical Code.

If a system ground is not available, the welding machine must be connected to a driven ground rod (see Figures 4-1 and 4-2) or to a water pipe that enters the ground not more than 10 feet (3,048 mm) from the machine. Refer to the Wire and Fuse Size Chart, Table 4-1, for selection of the proper grounding conductor.

NOTE: The grounding conductor must be as short as possible in order to produce the most efficient installation.

Treating An Outside Ground — The soil treating materials are placed in a circular trench around the rod, but not in direct contact. The crystals are gradually dissolved by surface waters and the solution is carried into the most useful area of earth surrounding the electrode (rod). Flood the trench several times when making original installation. See Figure 4-1.

Treating An Inside Ground — Reduce the diameter of the hole to 6 inches (152 mm), pour soil treating material in and around the rod. Add enough water to dissolve 8 pounds (4.0 kg) of soil treating material. Flood the hole every 6 months and replace the soil treating material when it is all dissolved. See Figure 4-2.

Connection To Line Voltage

Refer to Table 4-1 for wire sizes required.

CAUTION: Conductor size shall be selected to meet NEC, CE Code, and local codes and shall be modified as required for line voltage drop and ambient temperature.

This welding machine operates on a three-phase, AC input. See nameplate of the machine to determine required input voltage and frequency. Make certain that the welding machine is connected for the power supply voltage available. The input power cables should be connected to the power supply through a fused disconnect switch (furnished by the customer). Refer to the identification nameplate to determine the rating of the machine, then consult the local power company for wire and fuse size code. If no code exists, use the size of wire fuses listed in Table 4-1.

Line Voltage	Input Wire Size (AWG)*	Ground Wire Size (AWG)*	Lag Fuse Rating
200	8	8	50
230	8	8	60
460	12	12	30
575	12	12	30

** Input conductor sizes are based on allowable ampacities of insulated copper conductors, with not more than three conductors in a raceway or cable.*

Table 4-2 Recommended Wire and Fuse Sizes

Input Connections To Power Source

WARNING: The fused disconnect switch: Open or place in the OFF position and remove the fuses. To avoid an accident, make the electric power connections to the welding machine first, then to the fused disconnect switch. This will prevent an accidental application of power while the machine is being connected.

1. A line (wall) disconnect switch, with fuses or circuit breakers should be provided at the main power panel. The primary power input must have four insulated copper conductors (three power leads and one ground wire). The wires may be heavy rubber-covered cable or may be run in a solid or flexible conduit. Do not connect the input conductors until step 3.

2. For access to input terminal board, remove the screws which secure the right side panel of the power supply. The input terminal board is clearly marked to show the available primary voltage connections which may be used. Set the voltage links, on this board, to match your actual incoming voltage. As shipped from the factory, the input terminal board voltage links are set up for the highest line voltage. Refer to the voltage changeover diagram at the back of this manual for correct voltage selection connections.

3. Thread the input conductor cables from the wall disconnect switch through the hole in the rear panel and through the hole in the yoke to the input power switch on the front panel. Connect the conductors to terminals on the input power switch using UL listed pressure wire connectors. Connect the ground wire to the grounding stud provided on the lifting yoke near the changeover board.

WARNING: It is of the utmost importance that the chassis be connected to an approved electrical ground to prevent accidental shocking. Take care not to connect the ground wire to any of the primary leads.

4. Recheck all connections to make sure that they are tight, well insulated, and that the proper connection has been made.

Welding Leads

Use Table 4-2 for selection of the proper size copper welding leads.

Welding Current Amperes	TOTAL LENGTH OF LEAD CIRCUIT IN FEET (AND METERS) (ELECTRODE LEAD PLUS WORK LEAD)				
	50 Feet (15.2 M)	100 Feet (30.5 M)	150 Feet (45.7 M)	200 Feet (61.0 M)	250 Feet (76.2 M)
100	#4	#4	#2	#1	#1
150	#2	#2	#1	#1/0	#2/0
200	#1	#1	#1/0	#2/0	#3/0
250	#1/0	#1/0	#2/0	#3/0	#4/0
300	#2/0	#2/0	#3/0	#4/0	2 – #2/0
350	#3/0	#3/0	#4/0	2 – #2/0	2 – #3/0
400	#4/0	#4/0	#4/0	2 – #2/0	2 – #3/0

NOTE: Lead size shown is for 90°C (194°F) insulation, 30°C (86°F) ambient, and not over 4.5 volts lead drop.

Table 4-3

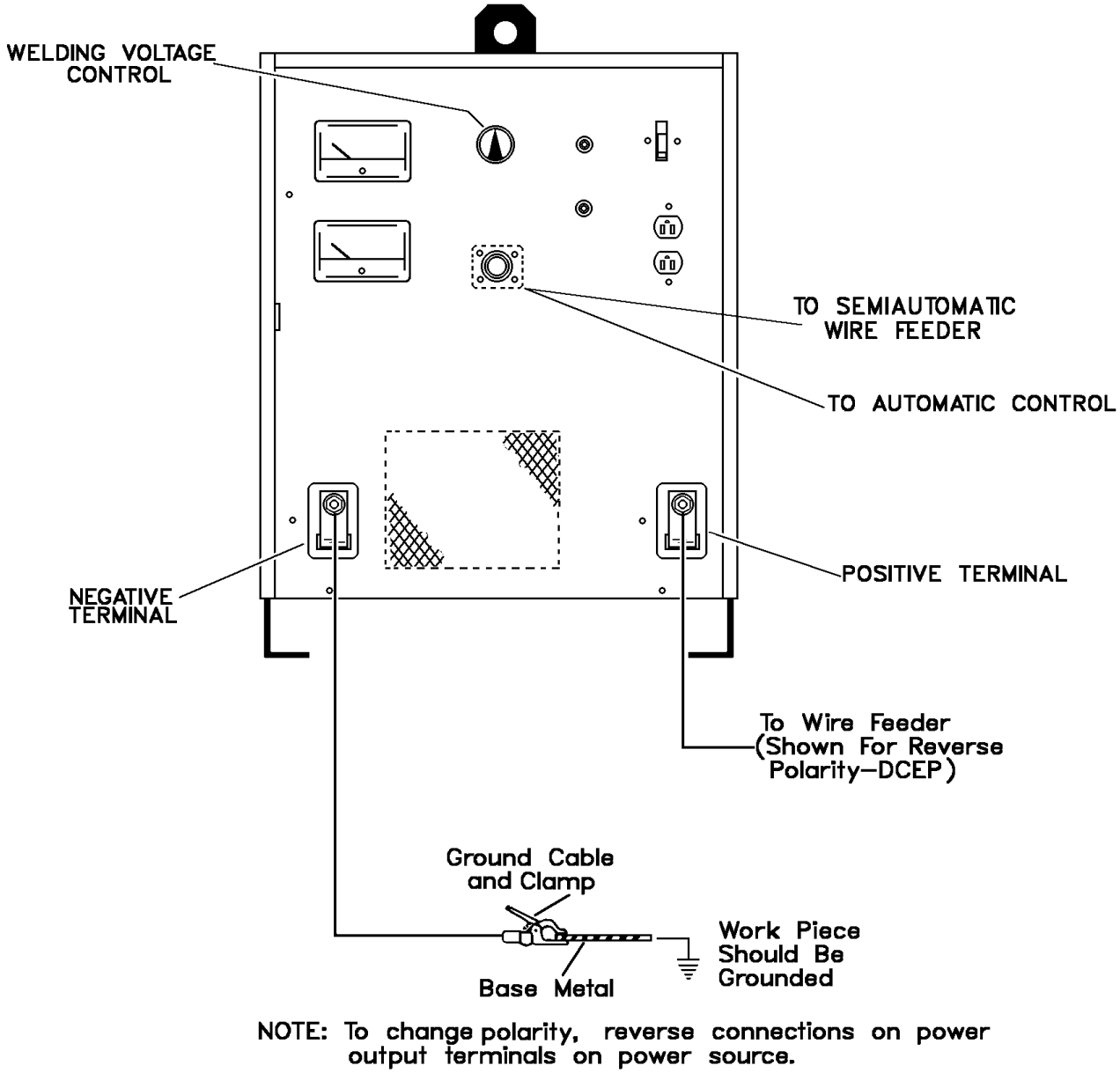

WELDING VOLTAGE CONTROL
TO SEMIAUTOMATIC WIRE FEEDER
TO AUTOMATIC CONTROL
POSITIVE TERMINAL
NEGATIVE TERMINAL
To Wire Feeder (Shown For Reverse Polarity—DCEP)
Ground Cable and Clamp
Work Piece Should Be Grounded
Base Metal
NOTE: To change polarity, reverse connections on power output terminals on power source.

Figure 4-4 Installation Diagram

OPERATION

Before operating this unit, be sure that all installation instructions have been accomplished. A thorough knowledge of system cleaning as instructed in Maintenance chapter is required for consistently satisfactory results. Also observe all applicable safety warnings listed in the Safety Instructions and Warnings chapter included in this manual and related instruction manual.

The operating instructions in this manual pertain only to the FABSTAR welding machine, but reference is made to other items of equipment not included as part of the FABSTAR . Before operating, consult technical manuals related to specific wire (electrode) feeders and welding guns usually used with this unit.

1. Perform all preset operations on welding gun and wire feeder.

2. Check installation (refer to Installation Diagram, Figure 4-4) to be certain all connections are tight and proper controls, gas, and torches are installed.

3. Set Voltage Control on the unit to the desired welding voltage.

4. Turn on gas supply at gas cylinder.

5. Turn control power switch to ON position. The cooling fan should now start.

NOTE: A thermostatically controlled fan motor is optional (Fan Turn-on Thermostat Kit 200155A), which may be incorporated into the system that stops and starts automatically when a predetermined temperature has been reached.

6. Adjust the gas supply to the desired flow rate.

7. Place the welding gun in proximity of the work.

8. Activate the gun switch. Open circuit voltage will appear, welding gas will flow, and the arc will initiate.

9. Readjust any controls as necessary.

CAUTION: Once a welding arc is established, power should not be removed from the welding machine, and the IN-PUT POWER ON/OFF SWITCH should not be turned OFF.

10. To terminate welding, proceed in the following manner:

a. Deactivate the gun switch. Gas will stop flowing.

b. Keep the gun in the WELD position momentarily (approximately 1/2 second) so the burnback circuit operates.

Burnback Operation — When the gun switch is released, the burnback circuit lowers the voltage to a value which is too low to maintain an arc. The arc will go out. If the wire continues to coast into the weld, there is still enough power at the lower burn-back voltage level to "burn off" the end of the wire. This removes the ball on the end of the wire and prepares it for the next start. It also prevents the wire from burning back to the tip or sticking in the weld puddle. The burnback time and burnback voltage is selectable.

Jumpers on the Control Board control these values. JP2 controls the burnback time and JP1 control the burnback voltage. Selection is made by removing the Jumper Block and relocating. Factory settings are shown in Figure 5-1.

The chart below shows some suggested settings for burnback time and voltage.

The gun must remain in the welding position after the gun switch is released to obtain the best results from the burnback circuit. This method of burnback eliminates the need for a time adjustment and prepares the wire for a good restart.

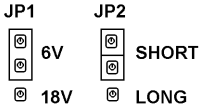


Figure 5-8

c. Turn off the gas at source.

Wire Type	Size	JP1 Wire Volts	JP2 Time
(FACTORY SETTINGS)		6	SHORT
ER70S-3	.035	6	Short
ER70S-3	.045	18	Short
E71T-1	.045	18	Short
ER308L	.035	6	Short
ER4043	3/64	6	Short

NOTE: These recommendations are based on overall performance. Specific applications may require different settings.

MAINTENANCE

Replacing SCRs

Replacing an SCR is a critical task but it can be accomplished in the field by following the instructions in the Detailed Troubleshooting Instructions section located in the Troubleshooting chapter of this manual.

Lubrication

The fan motor incorporates sleeve bearings. You can expect the life of this motor to exceed 50,000 hours without relubrication. Periodically cleaning the motor and lubricating the bearings will extend the life of the motor. The following table will furnish a recommended guide as to the frequency of this lubrication if desired.

NOTE: Apply 1-12 drops of 20W non-detergent oil at each end of bearing.

TYPE OF DUTY	LUBRICATION INTERVAL
Light (up to 6 hrs./day)	Every 12 mo.
Moderate (7 to 15 hrs./day)	Every 6 mo.
Heavy (16 to 24 hrs./day)	Every 3 mo.

Inspection and Cleaning

For uninterrupted, satisfactory service from this welding machine, it is necessary to keep the machine clean, dry, and well ventilated. At least every three months, or more often as necessary, wipe and blow out all dirt from the machine's internal components, with air pressure of not over 25 psi (172 kPa). Be sure to wipe the fan blades clean.

Check and tighten all electrical connections as necessary to eliminate unnecessary losses and to avoid subsequent trouble from overheating or open circuits. Check for broken wiring or damaged insulation on wiring.

WARNING: Disconnect line voltage from the unit before attempting any servicing inside unit. Turn off fused disconnect switch that supplies power to welding machine, and remove its fuses.

CAUTION: The flow of air through the welding machine is carefully directed by baffles. Never operate the welding machine with any of the side or top panels removed or open, as serious damage to the rectifiers might result.

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TROUBLESHOOTING

The following chart contains information which can be used to diagnose and correct unsatisfactory operation or failure of the various components of the welding machine. Each symptom of trouble is followed by a list of probable causes and the procedure necessary to correct the problem.

See Wire Feeder or Welding Gun Manual for troubleshooting information on the Wire Feeder or the Welding Gun.

Troubleshooting Guide

Welding machine will not start.

Power switch OFF

Place power switch in ON position.

Overtemperature thermostat has tripped. (Yellow indicator on)

Allow machine to cool to reset thermostat. (Yellow indicator will go out)

Power lines dead

Check voltage.

Broken input power lead

Repair.

Wrong line voltage

Check line voltage.

Incorrect input power connections at welding machine

Check connections against wiring diagram.

Tripped circuit breaker or fuse on input lines

Reset circuit breaker or replace fuses.

Unit delivers welding current but soon shuts down.

Overtemperature thermostat has tripped. (Yellow indicator on)

Allow machine to cool to reset thermostat. (Yellow indicator will go out)

Welding machine overloaded

Reduce load, overload can be carried only for a short time.

Duty cycle too high

Do not operate continually at overload currents.

Power leads too long or too small in cross section

Replace with larger diameter cable.

Ambient temperature too high

Operate at reduced loads when temperature exceeds 104°F (40°C).

Ventilation blocked

Check air intake and exhaust openings for obstructions to air flow. (See "Installation" section, "Location" paragraph.

Fan not operating

See "Fan not operating" below.

Solid-state contactor operates, but welding machine will not deliver welding current, and open circuit voltage is present at the output when gun switch is depressed.

No ground connections at work

Make connections.

Welding cables not connected

Make connections.

Voltage control does not control welding voltage.

Voltage local - remote switch set improperly

Set to local or remote as required.

Fan not operating (also see causes and remedies under "Welding machine will not start")

Tripped circuit breaker on front panel of welding machine

Reset circuit breaker; 115-volt receptacle may be overloaded.

Broken lead or connection to fan motor

Repair wiring.

Defective fan control thermostat (If equipped)

Replace thermostat.

Motor failed

Replace motor.

Inconsistent welding

Irregular wire feed speed

See wire feeder and/or welding gun manuals for wire feeding problems.

Inadequate shielding of arc

Adjust shielding gas flow for best results.

Wire feed rate or voltage set improperly

See filler metal charts for recommended wire feeds and voltage settings.

Incorrect polarity

Make sure polarity is correct for filler metal being used.

Loose cable connections

Check for loose or overheated connections and tighten.

Welding contact tube (tip) on wire feeder makes poor contact with electrode

Check contact tube hole size and replace with proper tube.

Detailed Troubleshooting Instructions

The FABSTAR 4030 machine is a solid-state welding machines. The method of troubleshooting is different, but it is not more difficult than troubleshooting a conventional unit. Do not overlook the obvious. As in the case of all electrical equipment, loose connections are the primary cause of malfunction both internal and external to the welding machine. Do not overlook bad grounds, worn contact tubes (tips), dirty cable liners, shorted control cables, wrong settings, blown fuses, worn contactors, misconnections from feeding equipment, misapplication, etc. The only equipment needed to properly detect a problem on this welding machine is a simple volt-ohmmeter, although an oscilloscope is the best method to quickly "see" the problem.

Control Circuit Board Malfunction — If a board malfunction occurs, the following situations will probably result:

1. Loss of arc completely.
2. Very noticeable, rough, sputtering, arc.
3. Loss of control and burnback.
4. Minor starting problems.

Mounting Procedure for SCRs

1. Thoroughly clean heat sink surface to eliminate any dirt or contamination.

2. Apply a thin coat of Alcoa #2 compound to cleaned surface. Alcoa #2 is available from Thermal Arc, part number 903870.

3. Positively locate the SCR in place in the heat sink. A small spring pin in the extruded heat sink will locate the SCR.

4. Place the clamp in position with the bolts through the holes in the heat sink, and proceed in following manner.

5. Tighten the nuts evenly until finger tight.

6. Tighten each bolt in 1/4 turn increments using correct size hex key.

7. Place the Force Indicator Gauge (903878) firmly against the springs as shown. Be sure both ends and the center are in firm contact with the springs. The gauge notch location will indicate the spring deflection or force. Correct mounting force is indicated as shown below.

8. Spring deflection over 2-1/4 inches of spring is .037" ± .002" for all clamps.

9. All clamps to be set at 4° mark. This corresponds to the VE3000-VE2500 section on the gauge label.

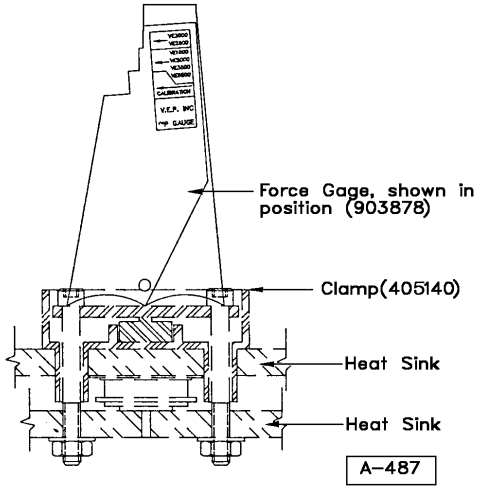
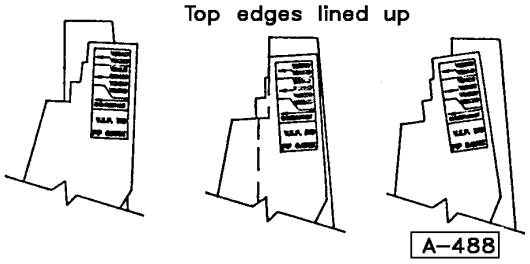


Figure 7-9

Examples:



Less than rated force. Tighten nuts alternately 1/4 turn at a time until points coincide.	Correct rated force.	Excessive force. Loosen both nuts and start over. NEVER adjust force by backing off the nuts. Friction will produce a false reading. Always start from Step 1.

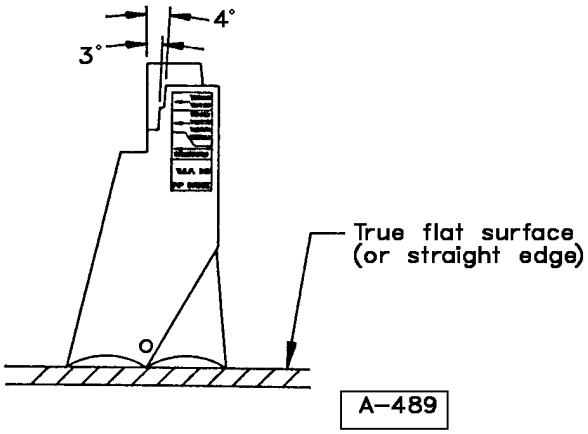
Figure 7-10

To Calibrate Force Gauge:

If the gauge is suspected of being out of calibration due to wear or damage, check it on a flat surface as shown below.

Testing Procedures (Printed Circuit Board)

See Figure 7-4.



If the calibration edges do not line up, calibrate the gauge by filing the bottom contact points.

Figure 7-11

Test point 3 (3) is the common ground and the negative probe should be connected to this point unless otherwise specified. All test readings are based on the line voltage supply being within specifications, that is, not exceeding ± 10% of nominal line voltage. For example, on a 460-volt, 3-phase line, the line voltage must not exceed 506 volts, or be less than 414 volts.

Adjustments (Preset at factory) — The following describes the factory adjustments. It is not intended that the adjustments be made in the field. Refer to Figure 7-4 for reference to P.C. Board (203909B).

1. Balance Adjustment for Conduction Angle of SCRs — The potentiometers R-12, R-13 are used to adjust the balance.

2. Arc Establish — J-2 plug pins 1 and 6. The remote Mega-Con 3 Cable Kit (H.B. P/N 203972), the 19-pin receptacle pin M (J-2 plug pin 1), and Pin L (J-2 plug Pin 6) — Pin 6 is common ground. Pin 1 will have + 15 volts, when the output amps is 50 amps (R68 adjusts this) or more, and pin 1 will drop to “0” volts when with 20 amps or less.

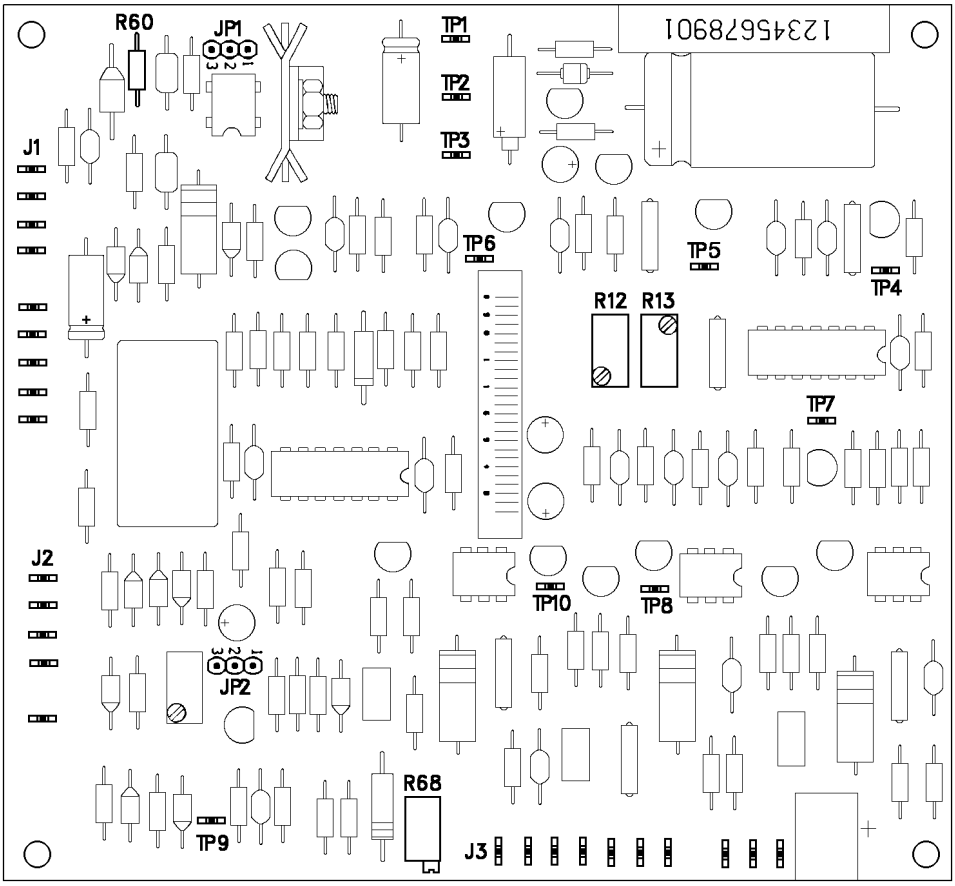


Figure 7-12

TEST	TEST POINTS	ADJUSTING POT	VOLTAGE	REMARKS
1	TP2 (+) TP3		30 ±10% DC	Checks positive supply voltage Checks R60 fuse to power supply
2	TP1 (+) TP3		15 V ±.75 V	Checks voltage regulator
3	TP4 (+) TP3 TP5 (+) TP3 TP6 (+) TP3	 R12 R13	Same as TP4	Adjusts phase balance of all three phases
4	TP8 (+) TP3		400 Amps = 5 V ±10%	Checks shunt amplifier

Table 7-4

PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An “Application Code” is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the right-most column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies, the word “ALL” will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

SPECIFICATION NUMBER	APPLICATION CODE
100010A-1	A
100010A-2	B
100010A-3	C

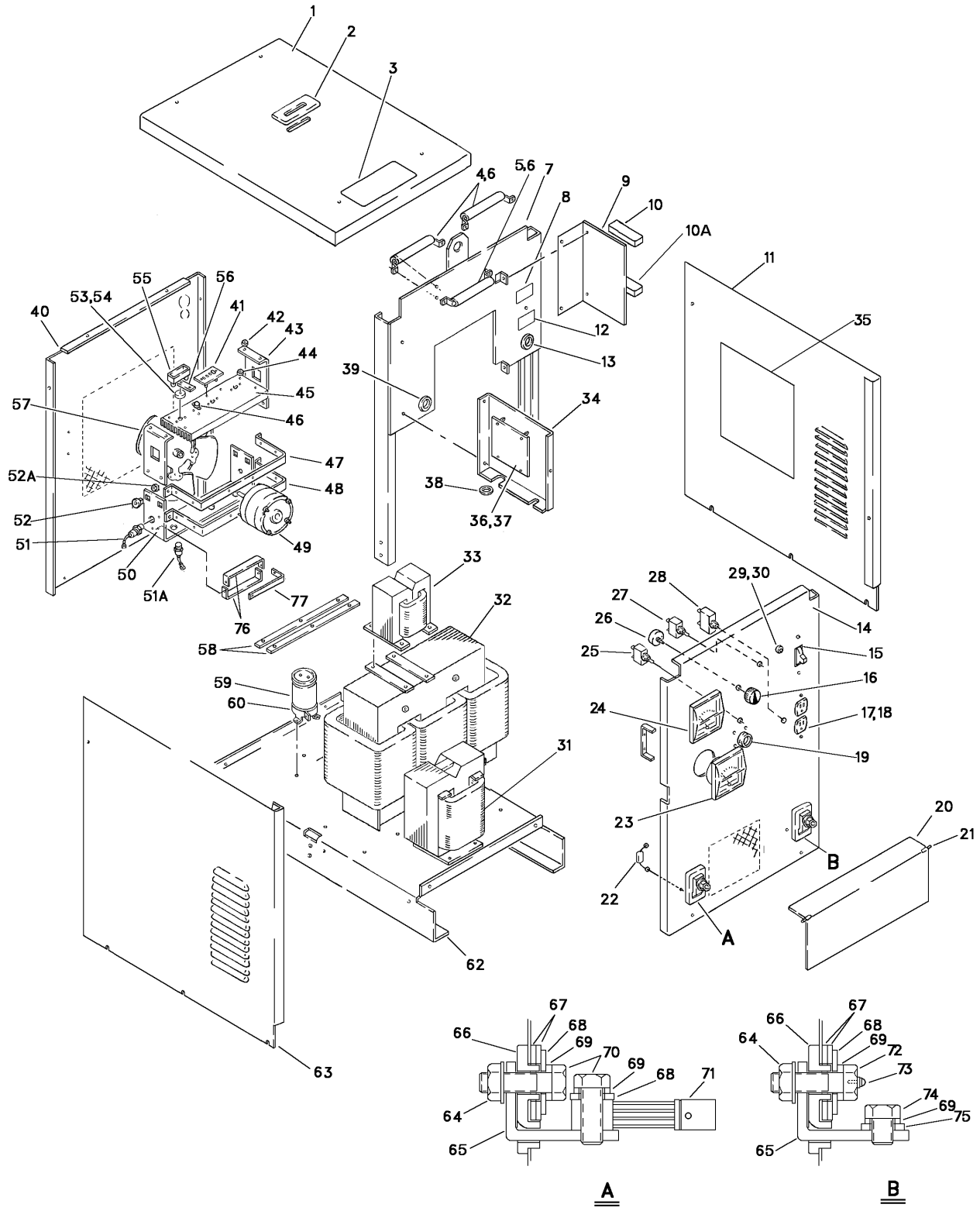


Figure 8-13 Fabstar Welder - Model 4030

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	100010-1	Welder - Fabstar® 4030, 60 Hz	1	All
1	830150	. Panel - Top	1	All
2	12CW-2170	. Boot - Lifting Eye	1	All
3	204036	. Label - Precautionary	1	All
4	405154-6	. Resistor - Fixed, 100 W	2	All
5	W-2974C	. Resistor - 2 Ohm, 100 W	1	All
6	400078	. Bracket - Mounting	6	All
7	830878-1	. Yoke - Lifting	1	All
8	830116	. Label - Ground	1	All
9	830885-1	. Board - Voltage Changeover	1	All
10	830815-1	. Block - Terminal 6 Pos	1	AB
10A	830815-3	. Block - Terminal 3 Pos	1	C
	830815-2	. Block - Terminal 9 Pos	1	A
	830815-1	. Block - Terminal 6 Pos	1	B
—	830904	. Label - Voltage Changeover	1	AB
11	830152	. Panel - Side, Right	1	All
12	408891	. Label - Ground	1	All
13	405362-1	. Bushing - Snap	1	All
14	830811-1	. Panel - Front, Control	1	All
15	409623-2	. Switch - Power, DPST	1	All
16	406806-3	. Knob - Control	1	All
17	402670	. Receptacle - Duplex, 3 Wire	1	All
18	366826-1	. Suppressor - Assembly (Mts. on rear of Item 18)	1	All
19	400254	. Receptacle - Box, Solid Shell	1	All
20	203413-2	. Door	1	All
21	203453	. Hinge	2	All
22	368705-8	. Capacitor - W/Leads and Terminals	3	All
23	400707-3	. Ammeter - DC	1	All
24	409624-1	. Voltmeter - DC	1	All
25	400400	. Switch - SPST	1	All
26	401428-8	. Potentiometer	1	All
27	405365-1	. Switch - SPST	1	All
28	203627-7	. Circuit Breaker - Pushbutton	1	All
29	830710-1	. Diode - Light Emitting	1	All
30	830709-1	. Clip - Retainer	1	All
31	830867	. Choke - Filter	1	All
32	830869	. Transformer - Main T1	1	A
	830870	. Transformer - Main T1	1	B
	830871	. Transformer - Main T1	1	C
—	Not Illustrated			

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
33	203885	. Choke - Filter, Input Assembly	1	All
34	830879-1	. Bracket - Mtg. P.C. Board	1	All
35	830748	. Label - Voltage Changeover	1	A
	830749	. Label - Voltage Changeover	1	B
	830902	. Label - Voltage Changeover	1	C
36	203909B-4	. Board - P.C. Control	1	All
37	404460-1	. Support - P.C. Board	4	All
38	402037-9	. Grommet - Rubber	1	All
39	405362-2	. Bushing - Snap	2	All
40	203754-1	. Panel - Rear	1	All
—	W-10080-5	. Strain - Relief	1	All
41	204375	. Suppressor - Surge Assembly	1	All
42	409870	. Washer - Insulator	4	All
43	203785-1	. Bracket - Mtg.	2	All
44	409869	. Bushing - Insulator	4	All
45	203779	. Heat Sink - Top	1	All
46	404044-7	. Thermostat - Overload	1	All
47	201751-1	. Bracket - Mtg. Fan Motor	1	All
48	830121	. Bracket - Mtg. Fan Motor	1	All
49	12TW-595-1	. Motor - Fan	1	All
50	830120	. Heat Sink - Lower	1	All
51	402833-3	. Diode - Silicon, Neg. Base	1	All
51A	W-10933-3	. Diode - Silicon, Neg. Base	3	All
52	409869	. Grommet - Mtg.	4	All
52A	409870	. Washer - Insulator	4	All
53	405139	. Rectifier - Silicon Controlled	3	All
54	16DA-954-12	. Pin - Spring	3	All
55	405140-1	. Clamp - Mtg.	3	All
56	203776-1	. Bar - Bus	3	All
57	8RT-609	. Fan	1	All
58	830887	. Bar - Bus	2	All
59	405278-13	. Capacitor	3	All
60	361052-10	. Clamp - Mtg.	2	All
61	Deleted			
62	830868-1	. Base - Mounting	1	All
63	830151	. Panel - Side, Left	1	All
64		. No Number		
65	5CW-974	. Bus - Cable Stud	2	All
66	5CW-975	. Bushing - Insulator	2	All
—	Not Illustrated			

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
67	5CW-976A	. Washer - Insulating	4	All
68	No Number	. Washer - FL., ST. 1/2	3	All
69	No Number	. Washer - LK. Std. 1/2	4	All
70	No Number	. Screw - 1/2-13 x 1-3/4, HHC, ST.,	2	All
71	CW-1142A	. Shunt - 50 MV, 400 Amp	1	All
72	351505	. Screw - 1/2-13 x 1-3/4, HHC ST. (Drilled for Item 73)	1	All
73	No Number	. Screw - #6-32 x 1/2 Rd. Hd. MH. ST.	1	All
74	No Number	. Screw - 1/2-13 x 1, HHC, ST.	1	All
75	DW-458	. Washer	1	All
76	204821	. Resistor	2	All
77	204893	. Bar-Bus	1	All

— Not Illustrated

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DIAGRAMS

- Note the model and specification number shown on the equipment nameplate.
- Locate these numbers in the model and specification number columns below.
- Use only those diagrams and instructions that are applicable.

MODEL NUMBER	SPECIFICATION NUMBER	CONNECTION DIAGRAM	SCHEMATIC DIAGRAM	VOLTAGE CHANGEOVER DIAGRAM
FABSTAR 4030	100010A-1, -2, & -3	830877 SHEET 1	830877 SHEET 2	830877 SHEET 3

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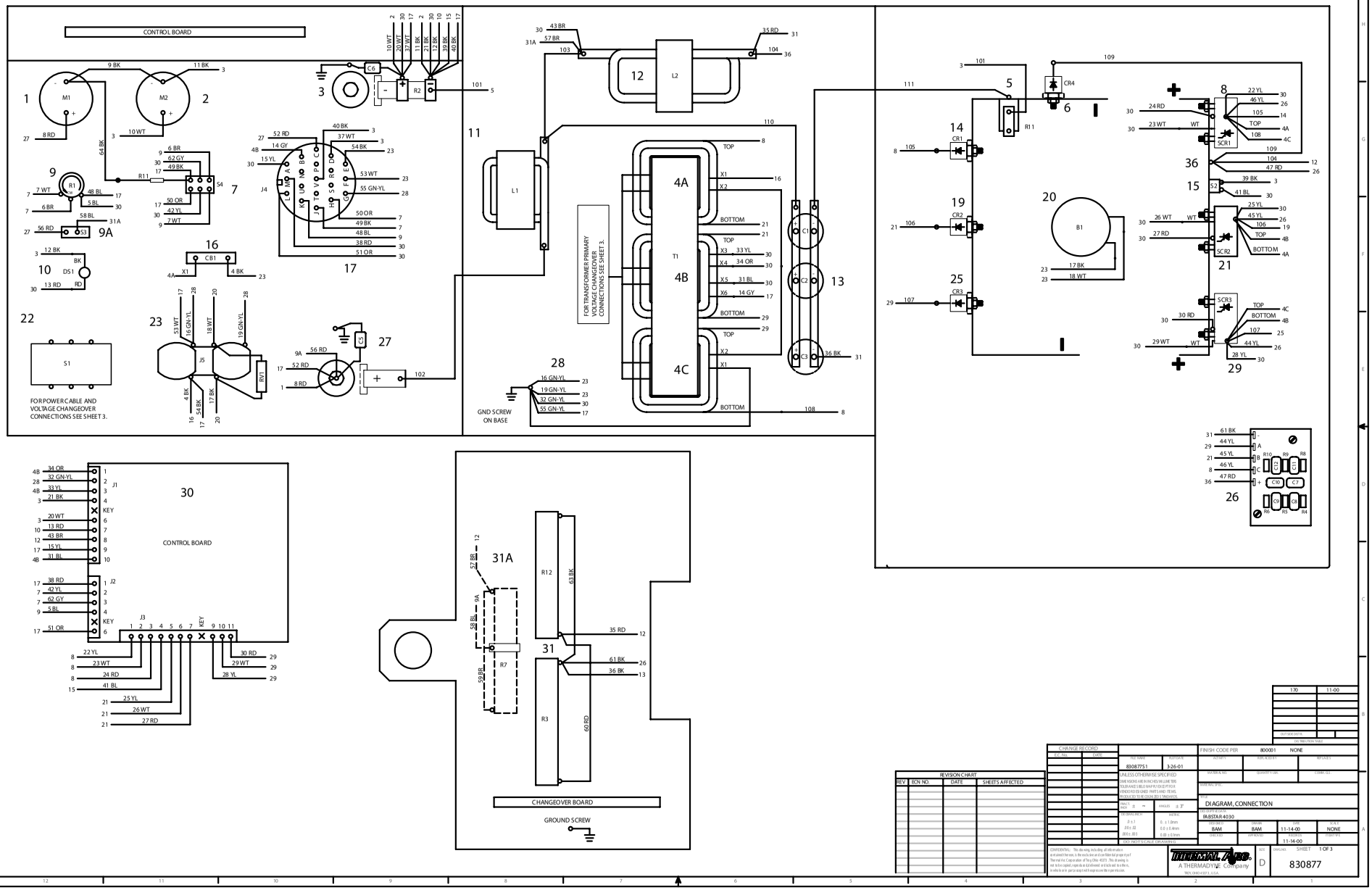

REVISION CHART			
REV	ECN NO.	DATE	SHEETS AFFECTED

CHANGE RECORD	
ECN No.	DATE

		170	11-00
OUTSIDE DATA			
DO NOT OVERLAP			

TITLE BLOCK	REVISION	FINISH CODE PER	800001 NONE
830877S1	3-26-01	PATENT	PER ASSY'S
UNLESS OTHERWISE SPECIFIED		MATERIAL NO.	QUANITY PER
DIMENSIONS ARE IN INCHES MILLIMETERS		MATERIAL SPEC.	
TOLERANCES (EXCEPT DECIMALS)		TITLE	DIAGRAM, CONNECTION
FRACTIONS ±	ANGLES ± 3°		
DECIMALS		PART NO.	
.X ± 1	SURFACE	IABSTAR4030	
.XX ± .03	6 ± 1.0mm	DRAWN	CHECK
.XXX ± .001	0.0 ± 0.4mm	BAM	BAM
MAX. PART CLEAN. 250 MG/SQ.FT.	0.00 ± 0.1mm	11-14-00	11-14-00
		APPROVED	DATE
			NONE
			QUANTITY

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THERMAL ARC
A THERMADYNE Company
TROY, OHIO 45373 U.S.A.

SIZE	DRAWING	SHEET
D	830877	1 OF 3

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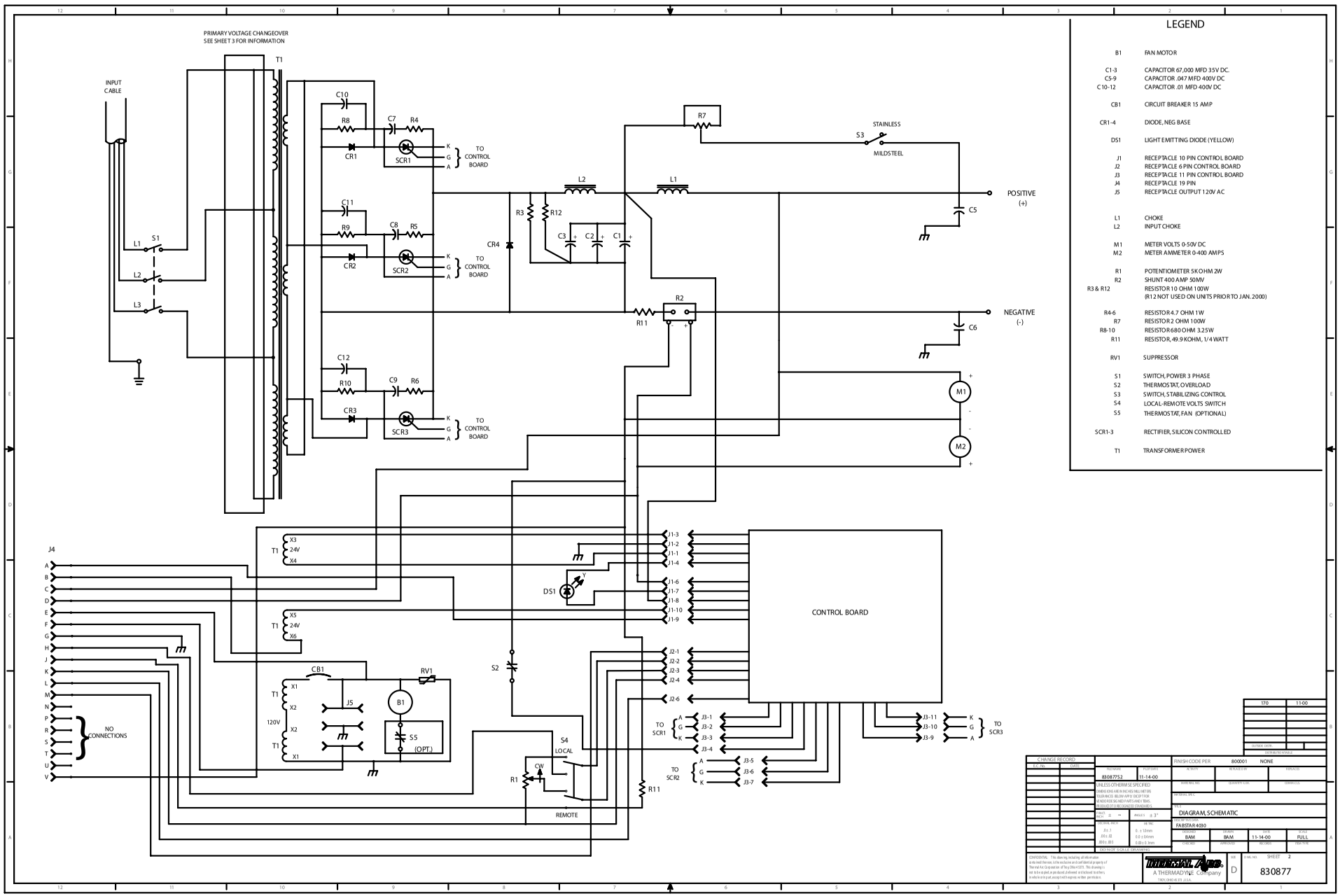

LEGEND

B1	FAN MOTOR
C1-3	CAPACITOR 67,000 MFD 35V DC.
C5-9	CAPACITOR .047 MFD 400V DC
C 10-12	CAPACITOR .01 MFD 400V DC
CB1	CIRCUIT BREAKER 15 AMP
CR1-4	DIODE, NEG BASE
DS1	LIGHT EMITTING DIODE (YELLOW)
J1	RECEPTACLE 10 PIN CONTROL BOARD
J2	RECEPTACLE 6 PIN CONTROL BOARD
J3	RECEPTACLE 11 PIN CONTROL BOARD
J4	RECEPTACLE 19 PIN
J5	RECEPTACLE OUTPUT 120V AC
L1	CHOKE
L2	INPUT CHOKE
M1	METER VOLTS 0-50V DC
M2	METER AMMETER 0-400 AMPS
R1	POTENTIOMETER 5K OHM 2W
R2	SHUNT 400 AMP 50MV
R3 & R12	RESISTOR 10 OHM 100W (R12 NOT USED ON UNITS PRIOR TO JAN. 2000)
R4-6	RESISTOR 4.7 OHM 1W
R7	RESISTOR 2 OHM 100W
R8-10	RESISTOR 680 OHM 3.25W
R11	RESISTOR, 49.9 KOHM, 1/4 WATT
RV1	SUPPRESSOR
S1	SWITCH, POWER 3 PHASE
S2	THERMOSTAT, OVERLOAD
S3	SWITCH, STABILIZING CONTROL
S4	LOCAL-REMOTE VOLTS SWITCH
S5	THERMOSTAT, FAN (OPTIONAL)
SCR1-3	RECTIFIER, SILICON CONTROLLED
T1	TRANSFORMER POWER

170	11-00

CHANGE RECORD

E.C. NO.	DATE

RELEASED 8308752	RELEASED 11-14-00

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES MILLIMETERS
TOLERANCES BELOW APPLY EXCEPT FOR
DIMENSIONS NOTED PARTS AND TRIMS
PRODUCED TO RECOGNISED STANDARDS.

FINISH CODE PER	800001 NONE
ALWAYS	REPLACES / REMARKS
MATERIAL SPEC	QUANTITY USE / REMARKS

DIAGRAM, SCHEMATIC

FABSTAR4030

DRAWN	DATE	SCALE	SIZE
BAM	11-14-00	FULL	
CHECKED	APPROVED	RECORDS	TRIM TYPE

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THERMAL ARC
A THERMADYNE Company
TROY, OHIO 45373 USA

SIZE	DWG. NO.	SHEET
D	830877	2

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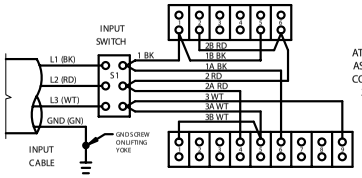
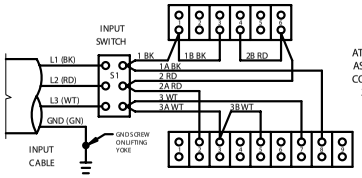
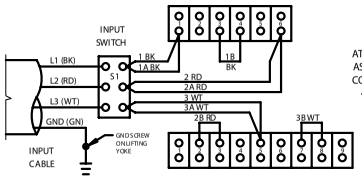
CONNECTIONS FOR 200/230/460 VOLT



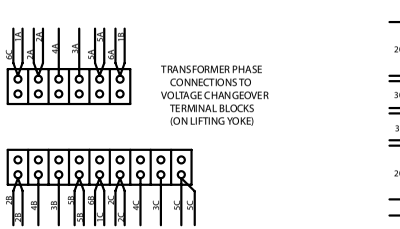
ATTACH WIRES AS SHOWN TO CONNECT FOR 200 VOLTS



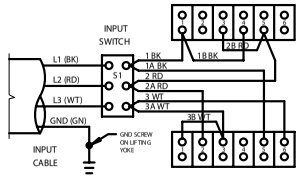
ATTACH WIRES AS SHOWN TO CONNECT FOR 230 VOLTS



ATTACH WIRES AS SHOWN TO CONNECT FOR 460 VOLTS



CONNECTIONS FOR 230/460/575 VOLT



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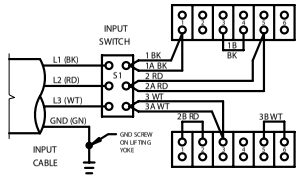

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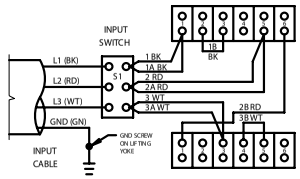
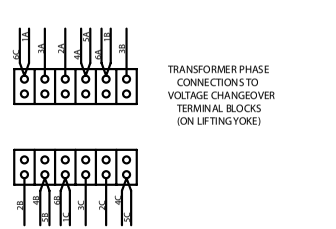
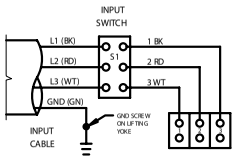


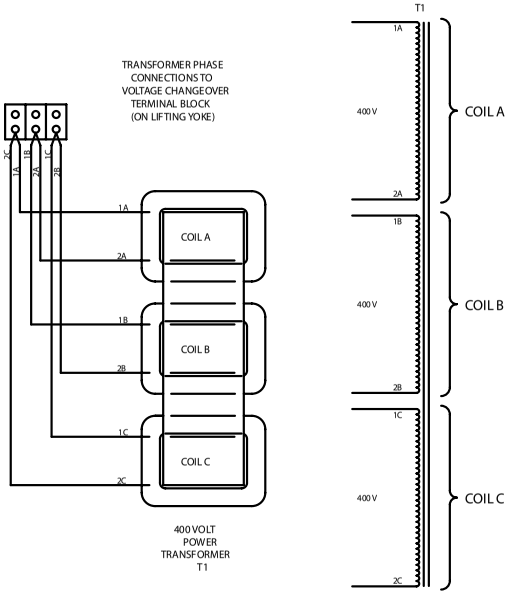
ATTACH WIRES AS SHOWN TO CONNECT FOR 575 VOLTS



CONNECTIONS FOR 400 VOLT



ATTACH WIRES AS SHOWN TO CONNECT FOR 400 VOLTS



170	11-00

DISTRIBUTION TABLE

CHANGE RECORD						
E.C.NO.	DATE					

FILE NAME	FOOTGATE	FINISH CODE PER	800001 NONE
8308753	12-1-01	ACTIVITY	REPLACED BY / REPLACES
UNLESS OTHERWISE SPECIFIED		MATERIAL NO.	QUANTITY USE / USED ACCESS
DIMENSIONS ARE IN INCHES WILL MEET TOLE MARKED BELOW APPLY EXCEPT FOR FEATURES CREATED BY SHEET METAL OPERATIONS PRODUCED TO RECOGNIZED STANDARDS.		MATERIAL SPEC.	
FRACT. ±	ANGLES ± 3°	TITLE	DIAGRAM, VOLTAGE CHANGEOVER
DECIMALS PLACE	X ± 1	CHECKED PART NAME	FABSTAR 4010
.X ± .1	X. ± 1.0mm	DESIGNED	DRAWN / DATE / SCALE
.XX ± .02	X.X ± 0.64mm	8AM	8AM / 11-14-00 / FULL
.XXX ± .010	X.XX ± 0.1mm	CHECKED	APPROVED / RECORDS / ITEM TYPE
DO NOT SCALE DRAWING			

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THERMAL ARC. A THERMADYNE Company
TWO DRAWING BY: JULIA

SIZE D | DWG NO. 830877 | SHEET 3

LIMITED WARRANTY

This information applies to Thermal Arc products that were purchased in the USA and Canada.

April 2006

LIMITED WARRANTY: Thermal Arc®, Inc., A Thermadyne Company ("Thermal Arc"), warrants to customers of authorized distributors ("Purchaser") that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the warranty period stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or damage, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

This warranty is exclusive and in lieu of any warranty of merchantability, fitness for any particular purpose, or other warranty of quality, whether express, implied, or statutory.

Limitation of liability: Thermal Arc shall not under any circumstances be liable for special, indirect, incidental, or consequential damages, including but not limited to lost profits and business interruption. The remedies of the purchaser set forth herein are exclusive, and the liability of thermal arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc, whether arising out of contract, tort, including negligence or strict liability, or under any warranty, or otherwise, shall not exceed the price of the goods upon which such liability is based.

No employee, agent, or representative of thermal arc is authorized to change this warranty in any way or grant any other warranty, and thermal arc shall not be bound by any such attempt. Correction of non-conformities, in the manner and time provided herein, constitutes fulfillment of thermal's obligations to purchaser with respect to the product.

This warranty is void, and seller bears no liability hereunder, if purchaser used replacement parts or accessories which, in thermal arc's sole judgment, impaired the safety or performance of any thermal arc product. Purchaser's rights under this warranty are void if the product is sold to purchaser by unauthorized persons.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc via an authorized Thermal Arc repair facility within thirty (30) days of purchaser's discovery of any defect. Thermal Arc shall pay no transportation costs of any kind under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the Purchaser. All returned goods shall be at the Purchaser's risk and expense. This warranty dated April 1st 2006 supersedes all previous Thermal Arc warranties. Thermal Arc® is a Registered Trademark of Thermal Arc, Inc.

WARRANTY SCHEDULE

This information applies to Thermal Arc products that were purchased in the USA and Canada.

April 2006

ENGINE DRIVEN WELDERS	WARRANTY PERIOD	LABOR
Scout, Raider, Explorer		
Original Main Power Stators and Inductors	3 years	3 years
Original Main Power Rectifiers, Control P.C. Boards	3 years	3 years
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, power switch semi-conductors	1 year	1 year
Engines and associated components are NOT warranted by Thermal Arc, although most are warranted by the engine manufacturer	See the Engine Manufactures Warranty for Details	

GMAW/FCAW (MIG) WELDING EQUIPMENT	WARRANTY PERIOD	LABOR
Fabricator 131, 181; 190, 210, 251, 281; Fabstar 4030; PowerMaster 350, 350P, 500, 500P; Excelarc 6045. Wire Feeders; Ultrafeed, Portafeed		
Original Main Power Transformer and Inductor	5 years	3 years
Original Main Power Rectifiers, Control P.C. Boards, power switch semi-conductors	3 years	3 years
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, electric motors	1 year	1 year

GTAW (TIG) & MULTI-PROCESS INVERTER WELDING EQUIPMENT	WARRANTY PERIOD	LABOR
160TS, 300TS, 400TS, 185AC/DC, 200AC/DC, 300AC/DC, 400GTSW, 400MST, 300MST, 400MSTP		
Original Main Power Magnetics	5 years	3 years
Original Main Power Rectifiers, Control P.C. Boards, power switch semi-conductors	3 years	3 years
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, electric motors	1 year	1 year

PLASMA WELDING EQUIPMENT	WARRANTY PERIOD	LABOR
Ultima 150		
Original Main Power Magnetics	5 years	3 years
Original Main Power Rectifiers, Control P.C. Boards, power switch semi-conductors	3 years	3 years
Welding Console, Weld Controller, Weld Timer	3 years	3 years
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, electric motors, Coolant Recirculator.	1 year	1 year

SMAW (Stick) WELDING EQUIPMENT	WARRANTY PERIOD	LABOR
Dragster 85		
Original Main Power Magnetics	1 year	1 year
Original Main Power Rectifiers, Control P.C. Boards	1 year	1 year
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, power switch semi-conductors	1 year	1 year
160S, 300S, 400S		
Original Main Power Magnetics	5 years	3 years
Original Main Power Rectifiers, Control P.C. Boards	3 years	3 years
All other original circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, power switch semi-conductors	1 year	1 year

GENERAL ARC EQUIPMENT	WARRANTY PERIOD	LABOR
Water Recirculators	1 year	1 year
Plasma Welding Torches	180 days	180 days
Gas Regulators (Supplied with power sources)	180 days	Nil
MIG and TIG Torches (Supplied with power sources)	90 days	Nil
Replacement repair parts	90 days	Nil
MIG, TIG and Plasma welding torch consumable items	Nil	Nil

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